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09/728,215	11/29/2000	Karl M. Bizjak	072548-0293357	6535
27498 7590 03/21/2011 PILLSBURY WINTHROP SHAW PITTMAN LLP P.O. BOX 10500 MCLEAN, VA 22102				
EXAMINER FAULK, DEVONA E				
ART UNIT 2614		PAPER NUMBER		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket_ip@pillsburylaw.com

Office Action Summary

Application No.

09/728,215

Applicant(s)

BIZJAK, KARL M.

Examiner

DEVONA E. FAULK

Art Unit

2614

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 October 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 12-23, 26-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17 is/are allowed.
- 6) ☒ Claim(s) 1-5, 12-16, 18-23, 26-35, 38-47, 51, 54-81 and 89-93 is/are rejected.
- 7) ☒ Claim(s) 4, 5, 50 and 118 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-943)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 10/25/10 have been fully considered but they are not persuasive. Regarding prior art Humphrey, the applicant asserts that the prior art fails to teach both a maximum amount of gain used with limited negative feedback that avoids over-amplification and clipping distortion and that limits the output in the case of the runaway feedback. The applicant asserts that claim 21 just recites that the gain offset having a predetermined minimum and maximum that is used. This does not equate to all that is argued by the applicant. The applicant is arguing something that is not claimed.
2. Regarding prior art Markevich, the applicant asserts that Markevich fails to disclose a limited negative feedback. The examiner disagrees. The feedback is limited as noted in the cited portions of column 3, line 14-column 4, line 11).
3. Claims 6-11,24-25,36-37,48,49,52-53,82-88,94-117,119 and 120 are cancelled
4. The examiner notes that the examiner did contact the applicant's representative to see if an agreement could be reached on the claims to expedite prosecution. The examiner invites the applicant's representative to contact the examiner upon receipt of this action to see if an agreement can be reached to expedite prosecution of this case.

Information Disclosure Statement

5. The information disclosure statement filed 9/2/10 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most

knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered. The office has not received an translation or an English abstract of cited foreign reference DE 196 24 092. This reference has not been considered for this reason.

Claim Objections

6. **Claim 4,5,50** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 26-33,59-62,70-81,89-93 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 26 recites "determining the difference between the environmental input and the reference input to generate a limited negative feedback signal" and then "determining a difference between the unmodified output signal and the modified output signal" whereas the signal being modified being one of the reference or environmental signal. With the first difference that occurs to provide negative feedback, is this difference done with both signals being unmodified? Clarity is needed.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claims 1,3,13-16,18,19,35,44-47,51,54,121, 122,123** are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 5,251,262) in view of Cummins et al. (US 4,887,299).

Regarding **claim 1**, Suzuki discloses a noise extraction method (Figure 3; column 2, lines 40-65; Figure 3) comprising the steps of:

providing an environmental input which includes a noise indicia (microphone 20, Figure 3; column 5, lines 55-59),

selectively modifying the environmental input in accordance with an algorithm based on a time response, amplitude of response comprising at least two components of a group including delay, converge and slow response (the modifying step is comprised of the delay 18 and adaptive controller 19 and inverse filter 22 of Figure 3, the delay 18 and adaptive controller 19 comprise one time algorithm and the inverse filter 22 comprises another time algorithm; the adaptive controller 19 having convergence; algorithm is defined as procedure for solving a mathematical problem in a finite number of steps ; column 5, lines 28-35; column 6, lines 16-39)

generation an output, whereby the output modifies a system gain (output of adaptive controller 19 is fed to speaker 17 and serves to modify a system gain; column 6, lines 16-39).

Suzuki fails to explicitly teach of delaying responding to a change in the noise indicia above a limit. Cummins teaches of delaying responding to a change in noise above a limit (column 7, lines 42- 65). It would have be obvious to modify Suzuki to include delaying responding to a change in noise above a limit in order to achieve a desired output.

All elements of claims 3 and 14 are comprehended by the rejection of claim 1 (microphone 20 produces an analog signal).

Regarding claim 15, Suzuki as modified teaches of wherein the step of selectively modifying the environmental input includes multiple instances of modifying in accordance with the selected algorithm (adaptive controller 19 adaptively modifies; column 5, lines 45-50).

All elements of claim 35,51-54,121 are comprehended by the rejection of claim 1 (Suzuki as modified teaches of a microphone, See Suzuki as modified as applied above to claim 1).

Regarding **claims 45-47**, Suzuki as modified teaches of a plurality of time algorithms and combining at least some results of the algorithms (Suzuki; the outputs

of the inverse filter is added to the output of the adaptive controller; regarding the plurality of time algorithms see Suzuki as applied above to claim 1).

Regarding **claim 123**, Suzuki as modified discloses providing a noise sensitivity control signal and modifying the environmental input based on the noise sensitivity control signal (Suzuki; output of inverse filter reads on noise sensitivity control signal, Figure 3; column 5, line 5- column 6, line 45). It is implicit that the environmental input modifies the signal-to-noise ration of a system output.

Regarding **claim 16**, Suzuki as modified discloses the step of selectively modifying the environmental input includes modifying the environmental input in accordance with a plurality of such algorithms., with at least some of such algorithms based on a different choice within the group (Suzuki; modification is done based on delay and the adaptive controller 19 of Figure 3).

Regarding **claim 18**, Suzuki as modified teaches of combining at least some results of the algorithms (the outputs of the inverse filter is added to the output of the adaptive controller, See Suzuki as applied above to claim 16).

Regarding **claim 13**,Suzuki as modified discloses wherein the environmental input is an analog signal. Suzuki fails to disclose that the environmental input is a digital signal. The examiner takes official notice that digital signals or digital processing is known in the art. It would have been obvious to modify Suzuki so that the environmental input is digital in order to provide a higher quality sound at the output.

Regarding **claim 19**, the examiner takes official notice that a plurality of outputs is well known in the art.

Regarding **claim 44**, Suzuki as modified teaches of a time response algorithm. Suzuki as modified fails to disclose that the time response algorithm includes variable attack and release. The examiner takes official notice that variable attack and release algorithms are known in the art. It would have been obvious to modify Suzuki so that the time response algorithm includes variable attack and release so that modifying the environmental input could be done dynamically.

Regarding **claim 122**, Suzuki as modified discloses using an adaptive filter (See Suzuki). Suzuki fails to disclose that the filter is a low pass filter. The examiner takes official notice that low pass filters are well known in the art and it would have been obvious to have the filter be a low pass filter for the benefit of only passing or outputting a signal in the low frequency range.

10. **Claim 12** is rejected under 35 U.S.C. 102(e) as being anticipated by Suzuki et al. (US 5,251,262) in view of Cummins et al. (US 4,887,299) in further view of Zurek et al. (US 4,956,867).

Regarding claim 12, Suzuki as modified discloses an environmental input. Suzuki fails to disclose that the environmental input comprises a plurality of environmental sub-inputs. Zurek discloses an environmental input comprised of environmental sub-inputs (Figures 1,2,4 ; microphones 12a,12b of Figures 1 and 2 and microphones 821-82m of Figure 4). It would have been obvious to modify Suzuki so that the environmental input

comprises a plurality of environmental sub-inputs in order to receive an input signal having target and noise signal components (Zurek, column 2, lines 28-30).

11. **Claims 34,38-41** is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 5,251,262) in view of Cummins et al. (US 4,887,299) in further view of Kates (US 6,072,884).

Regarding claim 34, Suzuki as modified fails to disclose a plurality of environmental inputs and combining a plurality of environmental inputs into a primary environmental input.

Kates discloses that signals from two or more microphones are combined to form audio signal 504 (Figure 5; column 10, lines 62-65; column 11, lines 11-20). It would have obvious to modify Suzuki to include a plurality of environmental inputs and combining the inputs into a primary environmental input to allow adaptive directional microphone processing.

Regarding **claim 38**, Suzuki as modified fails to disclose a plurality of environmental inputs and combining a plurality of environmental inputs into a primary environmental input.

Kates discloses that signals from two or more microphones are combined to form audio signal 504 (Figure 5; column 10, lines 62-65; column 11, lines 11-20). It would have obvious to modify Suzuki to include a plurality of environmental inputs and combining the inputs into a primary environmental input to allow adaptive directional microphone processing.

All elements of **claims 39-41** are comprehended by the rejection of claim 38 (Kates; See Figures 5 and 6; Figure 6 discloses an embodiment wherein the signal processing is performed separately for each environmental input).

12. . **Claim 20 is** rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 5,251,262) in view of Markevich (US 3,701,028).

Regarding **claim 20**, Suzuki discloses a noise extraction method (Figure 3; column 2, lines 40-65; Figure 3) comprising the steps of:

providing an environmental input which includes a noise indicia (microphone 20, Figure 3; column 5, lines 55-59),

selectively modifying the environmental input in accordance with an algorithm based on a time response, amplitude of response comprising at least two components of a group including delay, converge and slow response (the modifying step is comprised of the delay 18 and adaptive controller 19 and inverse filter 22 of Figure 3, the delay 18 and adaptive controller 19 comprise one time algorithm and the inverse filter 22 comprises another time algorithm; the adaptive controller 19 having convergence; algorithm is defined as procedure for solving a mathematical problem in a finite number of steps ; column 5, lines 28-35; column 6, lines 16-39)

generation an output, whereby the output modifies a system gain (output of adaptive controller 19 is fed to speaker 17 and serves to modify a system gain; column 6, lines 16-39);

providing a reference signal (14, Figure 3; column 5, lines 10-25);

determining the difference between the environmental input and the reference signal to generate a feedback signal (Figure 3; column 5, lines 8-55).

Suzuki as modified teaches of a positive feedback. Suzuki as modified fails to teach of a negative feedback. The examiner takes official notice that negative feedback and its benefits are well known in the art. It would have been obvious to modify AAPA as modified so that the feedback is negative to provide a more stable system.

Suzuki as modified fail to teach that the feedback is limited negative feedback. Markevich discloses a limited negative feedback and modifying according to that feedback (Figure 2, column 3, lines 14-column 4, line 11). It would have been obvious to modify Suzuki as modified so that the feedback is a limited negative feedback for the benefit of better reduce distortion of signals.

13. **Claims 21,42,43,68** are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 5,251,262) in view of Cummins et al. (US 4,887,299) in view of Humphrey (US 4,306,115) in view of Markevich (US 3,701,028).

Regarding **claim 21**, Susuki discloses

providing at least one environmental input having a noise indicia with a small noise fluctuation amplitude ,providing at least one reference input (speaker Figure 2, page 4), determining the difference between the environmental input and the reference input to generate a feedback signal (Figure 2) , converting the feedback signal to a gain

offset to correct for the small noise fluctuation (See Suzuki as applied above to claim 1); providing a reference signal (14, Figure 3; column 5, lines 10-25); determining the difference between the environmental input and the reference signal to generate a feedback signal (Figure 3; column 5, lines 8-55).

Suzuki fails to disclose the gain having a predetermined maximum and minimum. Humphrey discloses the concept of gain that has a predetermined minimum and maximum (column 3, lines 17-19). It would have been obvious to modify the Suzuki so that the gain has a predetermined maximum and minimum in order to provide a operating or working range for the user.

Suzuki as modified teaches of a positive feedback. Suzuki as modified fails to teach of a negative feedback. The examiner takes official notice that negative feedback and its benefits are well known in the art. It would have been obvious to modify AAPA as modified so that the feedback is negative to provide a more stable system.

Suzuki as modified fail to teach that the feedback is limited negative feedback. Markevich discloses a limited negative feedback (Figure 2, column 3, lines 14-column 4, line 11). It would have been obvious to modify Suzuki as modified so that the feedback is a limited negative feedback for the benefit of better reduce distortion of signals.

All elements of **claim 42 and 43** are comprehended by the rejection of claim 21.

All elements of **claim 68** are comprehended by the rejection of claim 21
(See Suzuki as modified as applied to claims 1 and 21).

14. **Claims 22 and 23 are** rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 5,251,262) in view Humphrey (US 4,306,115) in view of Markevich (US 3,701,028).

Regarding **claims 21 and 23**, Suzuki discloses
a method for correcting for small noise fluctuations including the steps of
providing at least one environmental input having a noise indicia with a small noise fluctuation amplitude ,providing at least one reference input (speaker Figure 2, page 4), determining the difference between the environmental input and the reference input to generate a feedback signal (Figure 2) , converting the feedback signal to a gain offset to correct for the small noise fluctuation (See Suzuki as applied above to claim 1); providing a reference signal (14, Figure 3; column 5, lines 10-25); determining the difference between the environmental input and the reference signal to generate a feedback signal (Figure 3; column 5, lines 8-55); converting the feedback signal.

Suzuki fails to explicitly disclose the gain having a predetermined maximum and minimum. Humphrey discloses the concept of gain that has a predetermined minimum and maximum (column 3, lines 17-19). It would have been obvious to modify the Suzuki so that the gain has a predetermined

maximum and minimum in order to provide a operating or working range for the user.

Suzuki as modified teaches of a positive feedback. Suzuki as modified fails to teach of a negative feedback. The examiner takes official notice that negative feedback and its benefits are well known in the art. It would have been obvious to modify AAPA as modified so that the feedback is negative to provide a more stable system.

Suzuki as modified fail to teach that the feedback is limited negative feedback. Markevich discloses a limited negative feedback (Figure 2, column 3, lines 14-column 4, line 11). It would have been obvious to modify Suzuki as modified so that the feedback is a limited negative feedback for the benefit of better reduce distortion of signals.

Regarding the RMS language of claim 21 and the rectifying and envelope detecting of claim 22, the examiner takes official notice these methods of converting a signal are all well known in the art. It would have been obvious to modify Suzuki as modified so that these methods are used to convert the signals for the benefit of providing a more precise measurement.

15. **Claim 55** is under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 5,251,262 in view of Cummins et al. (US 4,887,299) in further view of Shen (US 5,416,845).

..

Regarding **claim 55**, Suzuki as modified fails to disclose that the reference input includes a plurality of inputs.

Shen discloses wherein a reference input includes a plurality of reference inputs (Figure 6, column 15, lines 12-26, Figure 1B).

The prior art, as evidenced by Shen discloses a plurality of reference inputs. It would have been obvious to try the known method of noise extraction with a plurality of reference signals in order to provide a multichannel system.

16. **Claim 56-58** are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 5,251,262) in view of Cummins et al. (US 4,887,299) in further view of Shen (US 5,416,845) in further view of .Kates (US 6,072,884).

Regarding claims 56-58, Suzuki as modified discloses an environmental and reference input. Suzuki as modified fails to disclose combining at least some of the plurality of reference inputs to generate overall indication of output level (claim 56); a plurality of environmental inputs (claim 57); combining at least some of the plurality of inputs to generate an overall indication of noise (claim 58)

Kates discloses that signals from two or more microphones are combined to form audio signal 504 (Figure 5; column 10, lines 62-65; column 11, lines 11-20). It would have obvious to modify Suzuki as modified to include a plurality of environmental inputs or reference inputs and combining the inputs to allow adaptive directional microphone processing.

17. **Claims 63-67,69** are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (US 5,251,262) in view of Cummins et al. (US 4,887,299) in view of

Humphrey (US 4,306,115) in view of Markevich (US 3,701,028) in further view of Kates (US 6,072,884).

Regarding claims 63-67, Suzuki as modified discloses an environmental and reference input. Suzuki as modified fails to disclose wherein at least one of the steps of providing at least one environmental input and at least one reference input includes providing a plurality of such inputs.

Kates discloses that signals from two or more microphones (Figure 5; column 10, lines 62-65; column 11, lines 11-20). It would have obvious to modify Suzuki as modified to include a plurality of environmental inputs to allow adaptive directional microphone processing.

All elements of claim 64-67,69 are comprehended by the rejection of claim 63.

Allowable Subject Matter

18. Claim 17 is allowed.

Regarding claim 17 the prior art generally teaches of providing an environmental input which includes noise, selectively modifying the environmental input in accordance with an algorithm based on a time response comprising at least two components of a group including delay, convergence and slow responses, and generating an output and multiple instances of selectively modifying.

The prior art or combination thereof does not disclose combining some of the outputs of the multiple instances.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEVONA E. FAULK whose telephone number is (571)272-7515. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devona E. Faulk/
Primary Examiner, Art Unit 2614